CLAIMS

1. A method for carrying out surface plasmon resonance measurement, in which method

a beam (1) of electromagnetic radiation is produced by a source (2) of electromagnetic radiation,

said beam (1) of electromagnetic radiation is directed through a prism (3) onto a material layer (5) in an angle ($\alpha 1$; $\alpha 2$) of incidence, which material layer (5) at least partly covers a planar surface (4) of the prism (3),

a resonance phenomenon is caused,

a beam (6) of reflected electromagnetic radiation is produced and directed by the surface (4) through the prism (3) and further to a detector (7) for detecting the level of intensity of the beam (6) of reflected electromagnetic radiation,

and the change of intensity of the beam (6) of reflected electromagnetic radiation, caused by the surface resonance phenomenon, is measured,

characterized by

reflecting said beam (6) of reflected electromagnetic radiation with a mirror (8) to the detector (7).

2. A method as claimed in claim 1, **characterized** by

using a planar mirror (8), and

arranging the planar mirror (8) in plane parallel relation to the planar surface (4).

3. A method as claimed in claim 1, **characterized** in that the source (2) of electromagnetic radiation is a laser.

4. A method as claimed in any of the claims 1 - 3, **characterized** in that the material layer (5) is metal film, preferably containing Au.

5. A method as claimed in any of the claims 1 - 4, **characterized**

in that the prism (3) is a semi-cylindrical prism having a planar surface (4) having a longitudinal midline (9), and

in that the beam (1) of electromagnetic radiation is directed onto the longitudinal midline (9).

6. A method as claimed in any of the claims 1 - 5, **characterized** by rotating the prism (3) and the mirror (8) together with respect to the source (2) of electromagnetic radiation and the detector (7) so that the angle

(α) of incidence varies to achieve a surface plasmon resonance phenomenon.

7. A method as claimed in any of the claims 1 - 6, **characterized**

in that the prism (3) is a semi-cylindrical prism having a planar surface (4) having a longitudinal midline (9),

in that the beam (1) of electromagnetic radiation is directed onto the longitudinal midline (9), and

in that the prism (3) and the mirror (8) are together rotated about the longitudinal midline (9) of planar surface (4) of the semi-cylindrical prism (3) so that the angle (α1; α2) of incidence varies to achieve a surface plasmon resonance phenomenon.

8. A method as claimed in any of the claims 1 - 7, **characterized** by rotating the source (2) of electromagnetic radiation and the detector (7) together with respect to the prism (3) and the mirror (8) so that the angle (α1; α2) of incidence varies to achieve a surface plasmon resonance phenomenon.

9. A method as claimed in any of the claims 1 - 8, **characterized**

in that the prism (3) is a semi-cylindrical prism, having a planar surface (4) and having a longitudinal midline (9),

in that the beam (1) of electromagnetic radiation is directed onto the longitudinal midline (9), and

in that the source (2) of electromagnetic radiation and the detector (7) are together rotated about the longitudinal midline (9) of the planar surface (4) of the semi-cylindrical prism (3) so that the angle (α) of incidence varies to achieve a surface plasmon resonance phenomenon.

10. A method as claimed in any of the claims 1 - 9, **characterized** by

arranging a sensor (10) for detecting the presence of analytes (13) in a sample in functional contact with the material layer (5), which sensor comprises biomolecules (14) capable of binding a specific analyte to the biomoleculs, and which sensor is capable of causing a change on the material layer (5) to which it is in functional contact, indicative of an increase of analyte bound to the biomolecules,

feeding a sample containing analytes to the sensor (10),

causing analytes to bound to the biomolecules,

causing a change in the material layer (5), and

causing a change in the resonance phenomenon and the reflected electromagnetic radiation indicative of the presence of analytes in the sample fed to the sensor.

11. A device for carrying out surface plasmon resonance measurement, the device comprising

a source (2) of electromagnetic radiation for producing and directing a beam (1) of electromagnetic radiation through a prism (3) onto a material layer (5) in such a fashion that the electromagnetic radiation meets the material layer (5) at an angle ($\alpha 1$; $\alpha 2$) of incidence enabling a surface plasmon resonance phenomenon,

wherein the material layer (5) at least partly covers a planar surface (4) of the prism (3), and

which planar surface (4) is adapted to produce a beam (6) of reflected electromagnetic radiation, which is reflected through the prism (3) and further to a detector (7) for detecting the level of intensity of the beam (6) of reflected electromagnetic radiation,

characterized

in that the device comprises a mirror (8) for reflecting the beam (6) of reflected electromagnetic radiation to the detector (7).

12. A device as claimed claim 11, **characterized**

in that the mirror (8) is a planar mirror, and

in that the planar mirror (8) and the planar surface (4) of the prism (3) are arranged in a plane parallel relationship.

13. A device as claimed in claims 11 or 12, **characterized**

in that the source (2) of electromagnetic radiation is a laser, and

in that the beam (1) of electromagnetic radiation and the beam (6) of reflected electromagnetic radiation are laser beams.

14. A device as claimed in any of the claims 11 - 13, **characterized** in that the material layer (5) is metal film, preferably containing Au.

15. A device as claimed in any of the claims 11 - 14, **characterized** in that the prism (3) is a semi-cylindrical prism.

16. A device as claimed in any of the claims 11 - 15, **characterized** in that the device comprises a first rotating arrangement (11) for rotating the source (2) of electromagnetic radiation together with the detector (7) so that the angle ($\alpha 1$; $\alpha 2$) of incidence varies to achieve a surface plasmon

resonance phenomenon.

17. A device as claimed in claim 16, **characterized** in that the source (2) of electromagnetic radiation and the detector (7) are mechanically fixed to each other.

18. A device as claimed in claim 16 or 17, **characterized**

in that the prism (3) is a semi-cylindrical prism having a planar surface (4) having a longitudinal midline (9),

in that the source (2) of electromagnetic radiation is arranged to direct the beam (1) of electromagnetic radiation onto the midline (9) of the planar surface (4), and

in that the first rotating arrangement (11) is arranged to rotate the source (2) of electromagnetic radiation together with the detector (7) around the midline (9) of the planar surface (4) of the semi-cylindrical prism (3).

19. A device as claimed in any of the claims 11 - 18, **characterized** in that the device comprises a second rotating arrangement for rotating the prism (3) together with the mirror (8) so that the angle ($\alpha 1$; $\alpha 2$) of incidence varies to achieve a surface plasmon resonance phenomenon.

20. A device as claimed in claim 19, **characterized** in that the prism (3) and the mirror (8) are mechanically fixed to each other.

21. A device as claimed in claim 19 or 20, **characterized**

in that the prism (3) is a semi-cylindrical prism having a planar surface (4) having a longitudinal midline (9),

in that the source (2) of electromagnetic radiation is arranged to direct the beam (1) of electromagnetic radiation onto the midline (9) of the planar surface (4), and

in that the second rotating arrangement is arranged to rotate the source (2) of electromagnetic radiation together with the detector (7) around the midline (9) of the planar surface (4) of the semi-cylindrical prism.

22. A device as claimed in any of the claims 11 - 21, **characterized** by a sensor (10) for detecting the presence of analytes (13) in a sample in functional contact with the material layer (5), which sensor comprises biomolecules (14) capable of binding a specific analyte to the biomoleculs, and which sensor is capable of causing a change on the material layer (5) to which it is in functional contact, indicative of an increase of analyte bound to the biomolecules.